

## **Flexible Roller Arrangement**

### **Background of the Invention**

### **Field of the Invention**

The present invention relates to devices for supporting posters utilizing a formed roller arrangement for use with an extrusion by which the roller arrangement readily receives and releases posters from that extrusion, and incorporates by reference co-pending U.S. Patent Applications Rose -16, Elongated Poster Support Arrangement, and Rose 18, Pole for Poster Support Attachment and Removal, filed concurrently herewith.

### **Prior Art**

In the merchandising field particularly as it relates to customers in department stores and shopping malls and the like, poster advertisements are critical. They are changed frequently and often moved around in order to advertise goods and to catch the customer's attention. Setup and the support assembly of these posters has to be very simple and must be performed by relatively low paid employees of that merchandiser or store.

Heretofore, such support arrangements have required rather complicated grasping mechanisms requiring snapping open and closing

various rails or extrusions to capture the poster. There are also known a variety of so-called "roller-grip" holders which are known to be the ultimate in ease-of-use, but are typically labor intensive to manufacture, and thus are prohibitively expensive.

It is an object of the present invention to overcome the disadvantages of the prior art.

It is yet a further object of the present invention to provide a poster support arrangement which will safely grasp and hold a poster inserted therein in a safe and efficient manner.

It is still yet a further object of the present invention to provide a poster support arrangement which will permit the simple removal of the poster from the support.

It is still yet another object of the present invention to provide a poster support arrangement which will permit the poster to be removed therefrom and a new poster inserted without damaging the poster or the support arrangement.

It is yet a further object of the present invention to provide such poster-gripping means in a relatively efficient to manufacture manner, and thus provide a lower cost product.

of the first tapered sidewall. The volume between the central support wall and the second tapered sidewall defines a “gripping means” enclosure chamber. The gripping means enclosure chamber is elongated and is arranged to receive a gripping means disposed longitudinally therewithin.

The gripping means in a first preferred embodiment thereof comprises a plurality of soft resilient “sausage-like” rollers or links of resilient material connected to one another and therethrough by a central flexible connector line. Each of the links may be defined as roller links made of a resilient plastic or rubber or the like which are independently movable with respect to its adjacent link in either a twisting or rotation about the common, flexible connector line extending therethrough.

The roller link arrangement may be formed in a series of link molds having the elongated connector line centrally disposed therethrough in the mold apparatus, so that the connector line is physically secured to the respective individual roller link members within that mold.

The assembly of the poster support arrangement comprises the insertion of a plurality of longitudinally connected resilient roller links

arranged within the gripping means enclosure chamber and loosely disposed therewithin. The end caps may be put on each end of the longitudinal extrusion to permit the roller link members from falling out during insertion of the poster. The end caps may have a slot extending from an apex thereof toward the upper side of the extrusion, to permit a plurality of poster support arrangements to hold a poster which is longer than any individual single poster support arrangement, and for the purpose of removing the poster from the gripping apparatus.

A poster may be inserted within the gripping means enclosure chamber parallel to and along side the central support wall. Insertion of a poster is accommodated by the roller links neatly rotating about their flexible connector line and permitting the insertion of the poster thereadjacent. Gravity pulls the individual roller links towards the lowermost apex of the poster support arrangement extrusion and sufficiently secures it in a pinching manner to prevent the poster from falling out.

Thus what has been shown is a unique arrangement for supporting a poster with an elongated rail in a most simple and easily usable manner.

The invention thus comprises an elongated poster support arrangement comprising an elongated extrusion having an uppermost wall, at least one tapered sidewall, the sidewall angularly extending from the uppermost wall; a support wall arranged adjacent the tapered sidewall to define a longitudinal chamber between the tapered sidewall and the support, or a pair of longitudinal chambers depending upon whether a second tapered sidewall is disposed oppositely of the support wall; and a plurality of flexibly connected gripping roller link members loosely disposed within the/each longitudinal chamber, the chamber also arranged to receive a poster therein for pinched securement between a parallel pairing of gripping roller link members themselves or an array of roller link members and the support wall.

The gripping members comprise a plurality of generally cylindrically shaped roller links connected longitudinally together by a flexible connecting line. The roller links are preferably formed of resilient material. The roller links are preferably formed of a common diameter. The roller links are spaced apart a distance no greater than their diameter. The roller links are of generally cylindrical shape. The roller links connected together facilitates assembly due to their connection to one another.

The invention also comprises a method of making a roller link arrangement comprising the steps of: arranging a plurality of spaced apart mold openings in a pair of matable mold housings; stretching a taut flexible line in central, axial alignment with and between the spaced apart mold openings; mating the mold openings together; and injecting a resilient material into the mated mold openings to form the roller links of a set diameter about said flexible line. The method may include spacing the mold openings axially apart from one another a distance no greater than the set diameter of the roller links. The mold openings are arranged in linear alignment in a pair of half mold housings. The roller links may be disposed into the gripping apparatus in a simple manner because of their linkage connecting themselves to one another.

The invention also comprises a roller link arrangement for use with a gripping apparatus to permit a pinching of an item between a plurality of the roller links and an adjacent surface, the roller links having a common general diameter, the link arrangement comprising: a plurality of generally cylindrically shaped members of resilient material connected in axial alignment by a flexible line. The adjacent surface may comprise another set of roller links disposed parallel thereto. The flexible line preferably extends

centrally through each of the cylindrically shaped members. The shaped members are spaced apart a distance no greater than their common diameter. A further embodiment includes a pair of linked rollers spaced in a parallel arrangement on opposite sides of a common support wall in an extrusion, so as to insure that the poster arrangement is located exactly centrally, no matter what the thickness of the poster(s) is(are).

The invention also comprises an elongated poster support arrangement comprising an elongated extrusion having an uppermost wall, a pair of tapered sidewalls, the sidewalls angularly extending from the uppermost wall and each having a lowermost edge, with an elongated gap between their lowermost edges for receipt of a poster therewithin, the sidewalls comprising a longitudinal chamber therebetween. A pair of sets of flexibly connected gripping members are loosely disposed within the longitudinal chamber and parallel to one another, the chamber arranged to receive a poster therein for pinched securement between the pairs of gripping members. The sidewalls each have an uppermost edge spaced apart from one another to define a receiving slot for supporting the poster support arrangement. The sidewalls may have an end cap mounted on each end thereof. At least one of the end caps has a slot arranged therein to permit a poster to be easily removed from



the extrusion. The gripping members may be comprised of a elongated plurality of flexibly interconnected soft roller members which frictionally engage any posted inserted into the extrusion.

## Brief Description of the Drawings

The objects and advantages of the present invention will become more apparent when viewed in conjunction with the following drawings in which:

Figure 1 is a perspective view of a poster support arrangement constructed according to the principles of the present invention;

Figure 2 is an end view of the elongated extrusion of the present invention;

Figure 3 is a perspective view of a roller link gripping means;

Figure 3A is a perspective view of a mold apparatus for manufacturing roller link gripping means;

Figure 4 is a view of the extrusion shown in figure 2, with a roller link arrangement disposed therein;

Figure 5 is an end view of a further embodiment of the elongated extrusion with a double roller link arrangement disposed therein;

Figure 5A is an end view similar to the view shown in figure 5, with a poster arranged between the pair of roller links arranged therein;

Figure 6 is an end view of a further embodiment of the elongated extrusion with a roller link arrangement therein;

Figure 6A is an end view similar to the view shown in figure 6, with a poster arranged within the roller link and extrusion;

Figure 7 is an end view of a further embodiment of the extrusion for attachment to a vertical surface;

Figure 8 is a further embodiment of the extrusion arranged for sliding attachment to a flange member;

Figure 9 is an exploded perspective view of the extrusion and roller link arrangement shown in figure 4;

Figure 10 is an exploded perspective view of the extrusion and dual roller link arrangement shown in figure 5; and

Figure 11 is an exploded perspective view of the extrusion and roller arrangement shown in figure 7.

## Detailed Description of the Preferred Embodiments

Referring now to the drawings in detail, and particularly to figure 1, there is shown the present invention which comprises a poster support arrangement 10 for the receipt of a flat flexible poster "P" therewithin.

The poster support arrangement 10 of the present invention comprises an elongated extrusion 14 having a first end 16 and a second end 18, as shown in figure 1. Each end, that is, the first end 16 and the second end 18 may have an end cap 20 thereon. The elongated extrusion 14 comprising the poster support arrangement 10 has a generally elongated, flat, uppermost side 22, as may be seen in figures 2 and 4. The elongated poster support extrusion 14 has a first tapered sidewall 24 extending from one edge of the uppermost side 22 at an angle of about 75 degrees, as may be seen in figures 2 and 4. The first tapered sidewall 24 has a lowermost or distal edge 26 with a lip or flange 28 extending inwardly thereon. The elongated uppermost side 22 has a second tapered sidewall 30 extending downwardly therefrom in an angled manner of about 75 degrees with respect to the uppermost side 22, generally similar to the first tapered sidewall 24. The second tapered sidewall 30 has a lower or distalmost edge 32 which extends beyond the distalmost edge 26 of the first tapered sidewall 24. The distalmost edge 32

of the second tapered sidewall 30 has an inwardly projecting flange 34 arranged therealong, as shown in figures 2 and 4.

An elongated central support wall 36 is disposed between the first tapered sidewall 24 and the second tapered sidewall 30 in a manner generally perpendicular to the uppermost side 22. The central support wall 36 has a first or uppermost edge 38 with a connecting support web 40 unitarily extruded therewith, and is connected to an inside portion of the first tapered sidewall 24. A second connecting web 42 is similarly connected between the central support wall 40 and is unitary with the second tapered sidewall 30. The first and second connecting webs 40 and 42 hold the central support wall 36 in generally rigid alignment with the first and second tapered sidewalls 24 and 30 as well as the wall comprising the uppermost side 22.

The central support wall 36 has a distal or lowermost edge 44 which extends beyond the distalmost edge 32 of both the second tapered sidewall 30 and the distalmost edge 26 of the first tapered sidewall 24. A narrow longitudinally extending gap 46 is disposed between the distalmost edge 32 of the second tapered sidewall 30 and the respective side of the central

support wall 36, as shown in figure 2. This gap 46 permits a poster “P” to be inserted therein, as represented in figure 1. A second relatively narrow gap or open band 48 is longitudinally disposed between the central support wall 36 and the distalmost edge 26 and flange 28 of the first tapered sidewall 24. The volume between the central support wall 36 and the second tapered sidewall 30 defines a “gripping means” enclosure chamber 50, as represented in figures 2 and 4.

The gripping means enclosure chamber 50 is elongated and is arranged to receive a gripping means 52 disposed longitudinally therewithin, as shown in figure 4.

The gripping means 52 in a first preferred embodiment thereof comprises a plurality of soft resilient “sausage-like” links 60 of resilient material connected therethrough by a central flexible connector line 62, as best shown in figure 3. Each of the links 60 may be defined as roller links made of plastic or rubber or the like which are independently movable with respect to its adjacent link in either a twisting or rotation about the common flexible connector line extending therethrough. The roller link arrangement may be formed in a series of link molds 66 having the elongated connector

line 62 centrally disposed therethrough in the mold apparatus 68, as represented in figure 3A, so that the connector line 62 is physically secured to each of the respective individual roller link members 60 within that mold apparatus 68.

Each adjacent roller 60, 60' and 60'' are separated from one another on their line 62 by a distance "D" no greater than the diameter "L" of the roller 60, 60' or 60''. The rollers 60 are however, preferably all of a common diameter. The limitation on the separation between the adjacent rollers 60, 60' and 60'' prevents the rollers 60 from binding or folding over upon themselves/one another, when they are loaded into for example, a narrow receiving channel 50 as is shown in figure 4. The roller mold 68 may comprise a split elongated housing 65, as shown in figure 3A, having half-cylindrical openings 67 in each half with a groove 69 in at least one portion of the housing 65, to permit the line 62 to be supported therein during the molding process. Closing of the housing 65 onto a taut line 62 and injecting the resilient material into the now-paired half-cylindrical openings 67 to form the rollers 60.



The line 62 will extend through each roller 60, 60' and 60". Each roller 60 is thus permitted to rotate or bend out of co-axial alignment with its adjacent roller 60', within bending limits being that the rollers 60, 60' and 60" will be prevented from folding into a parallel or angled relationship greater than about sixty degrees with its adjacent roller 60.

The assembly of the poster support arrangement 10 comprises the insertion of a plurality of longitudinally connected resilient roller links 60 arranged within the gripping means enclosure chamber 50 and loosely disposed therewithin, as is represented in several preferred embodiments in figures 9, 10 and 11. The end caps 20 may be put on each end 16 and 18 of the longitudinal extrusion 14 to prevent the roller link members 60 from falling out during lifting of the poster support arrangement 10 onto a ceiling rail. The end caps 20 may have a slot 23 extending from an apex 25 thereof toward the upper side of the extrusion, as shown in figure 1. The slots 23 permit a plurality of poster support arrangements to hold a poster which is longer than any individual single poster support arrangement, and also permit removal of a poster from the extrusion by sliding the poster sideways out of the extrusion.

A poster "P" may be inserted within the gripping means enclosure chamber 50 parallel to and along side the central support wall 36, as shown in figure 4. Insertion of a poster is accommodated by the roller links 60 neatly rotating about their flexible connector line 62 and permitting the insertion of the poster "P" thereadjacent. Gravity pulls the individual roller links 60 towards the lowermost apex of the poster support arrangement extrusion 14, as shown in figure 4, and sufficiently secures it in a pinching manner to prevent the poster "P" from falling out when it is in its overhead location on a ceiling rail.

A further embodiment of the poster support arrangement 10 is shown in figure 5 wherein an extrusion is comprised of a pair of opposed "C" shaped extrusions 80 are connected by a first transverse member 82, and which is reinforced by a pair of back-to-back "L" shaped webs 84 and 86 connected to and spaced between the "C" shaped extrusions 80. The extrusions 80 each have a lower edge 88 which between them, define a longitudinal gap 90. A pair of roller members 92 and 94 (gripping means) are movable enclosed between the spaced apart "C" shaped extrusions 80 and the "L" shaped webs 84 and 86, comprising the gripping means enclosure chamber 52, of the present embodiment. A slot 98 is disposed

along the upper edge 100 of the extrusion for receipt of an inverted “T” shaped support, not shown. Figure 5A shows a poster “P” effectively pinched between the roller members 92 and 94 within the chamber 52, the roller members 92 and 94 being held by gravity and by their respective frictional engagement with the inside of the walls of the “C” shaped extrusion 80.

A similar preferred embodiment is represented in figures 6 and 6A wherein a poster support arrangement 10 is comprised of a pair of opposed “C” shaped extrusions 106 connected by a first transverse member 108 and reinforced by a “J” shaped web 110 and a “Z” shaped web 112. A gripping means enclosing chamber 52 is arranged between the inside wall of one of the “C” shaped extrusions 80 as shown in figure 6 and 6A to enclose an elongated set of connected roller members 114, comprising the gripping means. A poster “P” is shown inserted through an elongated space 116 at the lower side of the “C” shaped extrusions 80, as shown in figure 6A. The poster “P” is thus pinched by the roller members 114 wedged between the inner lower edge of the one wall of the “C” shaped extrusion and the “J” shaped web. Pulling downwardly on the poster would only cause the

gripping effect to increase. The roller members 114 would have to be moved upwardly, or the poster “P” slid to the side to best remove it.

Further embodiments are shown of the poster support arrangement 10, in figures 7 and 8. In each preferred embodiment, a single set of roller members 120 is disposed at the lower portion of a gripping means chamber 52, positioned against a support wall 122 and the lower inner edge of the extrusion wall 124. The embodiment in figure 7 may have an adhesive or magnetic attachment strip 126 on its outer surface of its support wall 122 to permit it to be attached to a vertical wall, not shown. The embodiment shown in figure 8 has an elongated flange 128 extending from an upper side of the extrusion wall 124 to permit the poster support arrangement 10 to engage a horizontally disposed receiving flange, not shown. A poster would be slid between the roller members 120 and the support wall 122 in each of the embodiments represented in figures 7 and 8, and would thus be frictionally engaged therebetween until the roller members 120 were moved upwardly or the poster slid to the side and out of the extrusion.

Figure 9 represents the poster support arrangement embodiment shown in figures 1, 2 and 4, in an “exploded” manner. The end cap 20 is

spaced from the walls 30 and 24 and the roller members 60 comprising the gripping means 52 are shown pulled slightly out of their enclosure 50.

Figure 10 represents the poster support arrangement 10 shown in figures 5 and 5A, in an exploded perspective view. The set of roller members 92 and 94 are displayed as parallel to one another in an enclosure chamber 50 common to both sets of roller members 92 and 94. Figure 11 represents the poster support arrangement 10 shown in an exploded view in figure 7, without a poster shown disposed therein, for clarity of viewing.